

Photodetector with Hetero-structure Using Lateral Growth

ABSTRACT OF THE INVENTION

A structure and method of fabrication for a Si based material p-i-n photodetector is disclosed. The light is absorbed in an undoped layer containing SiGe or Ge in such a manner that the absorption length is not limited by a critical thickness of the SiGe or Ge layer. The result is achieved by growing the SiGe or Ge layer from the walls of a trench in monocrystalline Si using lateral epitaxial. A second, doped material is disposed over the undoped layer for biasing and photocarrier collection in the p-i-n diode.